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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,036	07/30/2003	Noah Horton	100110411-1	9022

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EXAMINER
CASCHERA, ANTONIO A

ART UNIT	PAPER NUMBER
2676	

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/631,036	HORTON ET AL.
	Examiner	Art Unit	
	Antonio A Caschera	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23 and 25-32* is/are rejected.

7)☒ Claim(s) *24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
    application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date *7/30/03*.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities:

a.   The word, "for" in the phrase, "The memory for stores a parametric texture

map..." should be omitted (see page 2, lines 7-8 of the specification).

Appropriate correction is required.

Drawings

2.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they

include the following reference character(s) not mentioned in the description: #158 of Figure 9

and #457 of Figure 14. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or

amendment to the specification to add the reference character(s) in the description in compliance

with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the

application. Any amended replacement drawing sheet should include all of the figures appearing

on the immediate prior version of the sheet, even if only one figure is being amended. The

replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR

1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted

by the examiner, the applicant will be notified and informed of any required corrective action in

the next Office action. The objection to the drawings will not be held in abeyance.

3.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because

reference character "#142" has been used to designate both a memory and a graphics adapter

(see Figure 9). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in

reply to the Office action to avoid abandonment of the application. Any amended replacement

drawing sheet should include all of the figures appearing on the immediate prior version of the

sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled

"Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion

of the drawing figures. If the changes are not accepted by the examiner, the applicant will be

notified and informed of any required corrective action in the next Office action. The objection

to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
subject matter which the applicant regards as his invention.

4.   Claims 1-9, 10-17, 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

Claims 1, 10, 18 and 19 recite the limitation "the graphical object" in line 5 of claims 1

and 10 and the last line of claims 18 and 19. There is insufficient antecedent basis for this

limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 1-4, 7, 8, 10-14, 18-20, 22, 23, 26 and 28-31 are rejected under 35 U.S.C. 102(e)

as being anticipated by Lake et al. (U.S. Patent 6,822,658 B1).

In reference to claims 1, 10 and 20, Lake et al. discloses a graphical display system and

method for rendering a silhouette edge of a 3-D model (see column 1, lines 5-7, column 4, lines

52-53 and Figure 12). Lake et al. discloses various memories for storing 3D data, computer

instructions and an edge list (see column 4, lines 53-59 and #84 of Figure 12). Note, the office

interprets the 3D data of Lake et al. to comprise of texture map data as Lake et al. further

discloses applying different texture maps to edges depending upon a certain criteria (see column

3, lines 30-34). Lake et al. discloses selecting a texture map, from various different texture maps

and applying the texture map to an edge of the 3D model (see column 3, lines 30-41). Lake et al.

discloses selecting the texture map based upon the size of an angle formed between two edges

(see column 3, lines 22-32 and 42-50). Lake et al. also discloses the types of texture maps to be

"straight-stroke," "leftward-stroke" and "rightward-stroke" (see column 3, lines 34-41). Note,

the office interprets the, "leftward-stroke" and "rightward-stroke" texture maps of Lake et al.,

each functionally equivalent to a PTM (parametric texture map) of applicant's claims as these

texture maps define texture for a curved region of the model while the, "straight-stroke" texture

map of Lake et al. is seen as functionally equivalent to the non-PTM texture map of applicant's

claim because it defines a non-curved region (see Figures 8a-c of Lake et al.). Lake et al. further

discloses rendering the edge using the selected texture map (see column 3, lines 51-52). Note,

the office interprets the processor (#81 of Figure 12) to perform texture mapping functionally

equivalent to the texture mapper of applicant's claims (see columns 4-5, lines 53-7). Further

note, in reference to claim 1, the office interprets that Lake et al. inherently discloses selecting a

PTM or non-PTM version of a graphical object because as Lake et al. selects which texture map

to utilize, a PTM or non-PTM version of the target edge is inherently rendered.

In reference to claims 2, 12 and 29, Lake et al. discloses all of the claim limitations as

applied to claims 1, 11 and 28 respectively in addition, Lake et al. discloses determining whether

an edge is a silhouette edge, in order to apply texture thereto, by calculating whether the edge is

back or front-facing (see column 2, lines 36-50) which the office interprets as inherently

calculating and deciding which texture, if any, to apply to an edge based on the distance from a

user's viewpoint to the edge since Lake et al. uses eyepoint and normal vectors in making this

determination.

In reference to claims 3, 13 and 30, Lake et al. discloses all of the claim limitations as

applied to claims 1, 11 and 28 respectively in addition, Lake et al. discloses determining whether

an edge is a silhouette edge, in order to apply texture thereto, by calculating whether the edge is

back or front-facing (see column 2, lines 36-50) which the office interprets as inherently

calculating and deciding which texture, if any, to apply to an edge based on a viewing angle

since Lake et al. uses eyepoint and normal vectors in making this determination.

In reference to claims 4, 14 and 31, Lake et al. discloses all of the claim limitations as

applied to claims 1, 11 and 28 respectively in addition, Lake et al. discloses determining whether

an edge is a silhouette edge, in order to apply texture thereto, by calculating whether the edge is

back or front-facing (see column 2, lines 36-50) which the office interprets as inherently

calculating and deciding which texture, if any, to apply to an edge based on the amount of visible

surface area for the edge since front and back-facing polygons providing varying visible amounts

of surface area.

In reference to claim 7, Lake et al. discloses all of the claim limitations as applied to

claim 1 above in addition, Lake et al. discloses comparing signs of vector dot products of normal

and eyepoint vectors to determine whether edges are front or back-facing (see column 2, lines

36-50).

In reference to claims 8, 11, 22, 23 and 28, Lake et al. discloses all of the claim

limitations as applied to claims 7, 10, 20 and 26 respectively. Lake et al. discloses selecting a

texture map, from various different texture maps and applying the texture map to an edge of the

3D model (see column 3, lines 30-41). Lake et al. discloses selecting the texture map based upon

the size of an angle formed between two edges (see column 3, lines 22-32 and 42-50). Since

Lake et al. discloses determining whether an edge is a silhouette edge, in order to apply texture

thereto, by calculating whether the edge is back or front-facing (see column 2, lines 36-50), the

office interprets that Lake et al. inherently discloses deciding which texture, if any, to apply to an

edge based on whether the edge is capable of being viewed from the current viewing position.

In reference to claims 18, 19 and 26, Lake et al. discloses a graphical display system and

method for rendering a silhouette edge of a 3-D model (see column 1, lines 5-7, column 4, lines

52-53 and Figure 12). Lake et al. also discloses the rendering methods implemented on a

computer readable-medium having a program (see columns 4-5, lines 52-7, column 5, lines 15-

25 and Figure 12). Lake et al. discloses various memories for storing 3D data, computer

instructions and an edge list (see column 4, lines 53-59 and #84 of Figure 12). Note, the office

interprets the 3D data of Lake et al. to comprise of texture map data as Lake et al. further

discloses applying different texture maps to edges depending upon a certain criteria (see column

3, lines 30-34). Lake et al. discloses selecting a texture map, from various different texture maps

and applying the texture map to an edge of the 3D model (see column 3, lines 30-41). Lake et al.

discloses selecting the texture map based upon the size of an angle formed between two edges

(see column 3, lines 22-32 and 42-50). Lake et al. also discloses selecting the texture map based

upon the size of an angle formed between two edges (see column 3, lines 22-32 and 42-50).

Since Lake et al. discloses determining whether an edge is a silhouette edge, in order to apply

texture thereto, by calculating whether the edge is back or front-facing (see column 2, lines 36-

50), the office interprets that Lake et al. inherently discloses deciding which texture, if any, to

apply to an edge based whether the edge is capable of being viewed from the current viewing

position. Lake et al. also discloses the types of texture maps to be "straight-stroke," "leftward-

stroke" and "rightward-stroke" (see column 3, lines 34-41). Note, the office interprets the,

"leftward-stroke" and "rightward-stroke" texture maps of Lake et al., each functionally

equivalent to a PTM (parametric texture map) of applicant's claims as these texture maps define

texture for a curved region of the model while the, "straight-stroke" texture map of Lake et al. is

seen as functionally equivalent to the non-PTM texture map of applicant's claim because it

defines a non-curved region (see Figures 8a-c of Lake et al.). Lake et al. further discloses

rendering the edge using the selected texture map (see column 3, lines 51-52). Note, the office

interprets the processor (#81 of Figure 12) to perform texture mapping functionally equivalent to

the texture mapper of applicant's claims (see columns 4-5, lines 53-7). Further note, the office

interprets that Lake et al. inherently discloses selecting a PTM or non-PTM version of a

graphical object because as Lake et al. selects which texture map to utilize, a PTM or non-PTM

version of the target edge is inherently rendered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

6.   Claims 17, 21 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Lake et al. (U.S. Patent 6,822,658 B1).

In reference to claims 17, 21 and 27, Lake et al. discloses all of the claim limitations as

applied to claims 11, 20 and 26 respectively above. Lake et al. does not explicitly disclose that

the non-parametric texture (the straight-stroke map) is derived from the parametric (curved, left

and right-stroke maps) however, at the time the invention was made, it would have been obvious

to one of ordinary skill in the art to produce the stroke maps of Lake et al. from other stroke

maps. Applicant has not disclosed that deriving a non-PTM texture from a PTM texture provides

an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill

in the art, furthermore, would have expected Applicant's invention to perform equally well with

texture map derivation of Lake et al. because Lake et al. provides storage for the different types

of textures (see #84 of Figure 12 of Lake et al.). Various textures could be derived from a single

"master" texture, however, thereby reducing overall system size by reducing the amount of

memory needed to store different textures and instead deriving different textures from a single

"master" texture. Therefore, it would have been obvious to one of ordinary skill in this art to

modify Lake et al. to obtain the invention as specified in claims 17, 21 and 27.

7.   Claims 5, 6, 16, 25 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Lake et al. (U.S. Patent 6,822,658 B1) in view of Migdal et al. (U.S. Patent 6,417,860 B1).

In reference to claim 5, Lake et al. discloses all of the claim limitations as applied to

claim 1 above. Lake et al. does not explicitly disclose rendering the graphical object or

silhouette edge based upon a level of detail value. Migdal et al. discloses an apparatus and

method for producing texture by using selected portions of a texture Mip-map (see column 3,

lines 10-12). Migdal et al. discloses forming a clip-map, a representation of various tiles of a

Mip-map, selecting a level of detail value which corresponds to a certain texture Mip-map (see

column 8, lines 4-39). It would have been obvious to one of ordinary skill in the art at the time

the invention was made to implement the texture selection techniques of Lake et al. with the

level of detail, Mip-map texturing techniques of Migdal et al. in order to provide a method of

varying textures based on the viewpoint of a user to magnify and minify textures, showing

appropriate detail for the appropriate viewpoint (see column 1, lines 39-57 of Migdal et al.).

In reference to claims 6, 16, 25 and 32, Lake et al. and Migdal et al. disclose all of the

claim limitations as applied to claims 5, 11, 22 and 28 respectively above in addition, Migdal et

al. discloses forming a clip-map, a representation of various tiles of a Mip-map, selecting a level

of detail value which corresponds to a certain texture Mip-map (see column 8, lines 4-39).

Migdal et al. discloses that the Mip-maps contain texture pattern data (see column 1, lines 50-51)

which the office interprets equivalent to primitives defining a graphical object since the pattern

data defines the surface of the object. Also, Lake et al. discloses that the above described

texturing techniques can be performed in any combination of hardware and software including computer programs executing on programmable computers (see column 4, lines 53-67 of Lake et al.). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the texture selection techniques of Lake et al. with the level of detail, Mip-map texturing techniques of Migdal et al. in order to provide a method of varying textures based on the viewpoint of a user to magnify and minify textures, showing appropriate detail for the appropriate viewpoint (see column 1, lines 39-57 of Migdal et al.).

Allowable Subject Matter

8.   Claims 9, 15 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In reference to claims 9, 15 and 24, the prior art of record (Lake et al. (U.S. Patent 6,822,658 B1) and Migdal et al. (U.S. Patent 6,417,860 B1)) does not explicitly disclose the value indicative of a user's viewpoint, weighted based on at least two of a group consisting of: a distance between the user's viewpoint and a graphical object, a viewing angle of the graphical object, and an amount of visible surface area of the graphical object.

References Cited

9.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

    a.   Ge et al. (U.S. Patent 6,124,858)

- Ge et al. discloses a method and apparatus for rendering a two-dimensional
  resolution-dependent raster image by mapping the two-dimensional raster
  image to a portion of a two-dimensional parametric map of a three-
  dimensional object.

Conclusion

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391.
The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00
AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Matthew Bella, can be reached at (703)-308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,

Arlington, VA, Sixth Floor (Receptionist).

        Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the Technology Center 2600 Customer Service Office whose telephone

number is (703) 306-0377.

aac

12/30/04

MATTHEW C. BELLA
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